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EVALUATION OF SOUTHERN PINE BEETLE INFESTATIONS ON THE HOMOCHITTO NATIONAL FOREST, MISSISSIPPI

by

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INTRODUCTION

An aerial photographic survey and subsequent ground examination were conducted on the Homochitto National Forest during October 1974 (Fig. 1). The survey, which covered the Bude (188,407 acres) and the Homochitto (185,090 acres) Ranger Districts, was performed by the Forest Pest Management Group to determine the current status and trend of the southern pine beetle populations on the Forest.

Southern pine beetle infestations on the Forest are part of a south-wide outbreak involving 10 states. The current outbreak was first observed on the Forest in the summer of 1970.

METHODS

A 25 percent photographic survey utilizing 200 acre sample plots, was performed in evaluating the southern pine beetle population[1/].

Some of the spots detected during the aerial phase of the evaluation were examined on the ground to confirm the cause of mortality, determine the number of spots and trees that were infested by the beetle, and to assess the general condition of beetle populations.

TECHNICAL INFORMATION

Insect - Southern pine beetle, *Dendroctonus frontalis*, Zimm.

Hosts - The southern pine beetle will attack all species of southern yellow pine. However, loblolly pine, *Pinus taeda* L., and shortleaf pine, *P. echinata* Mill., are the preferred hosts.

1/ Evaluating Southern Pine Beetle Infestations, 1970, USDA, USFS, SA, S&PF, Div. of FPM, Pub. FPM-8, Atlanta, Ga. 35 pp.

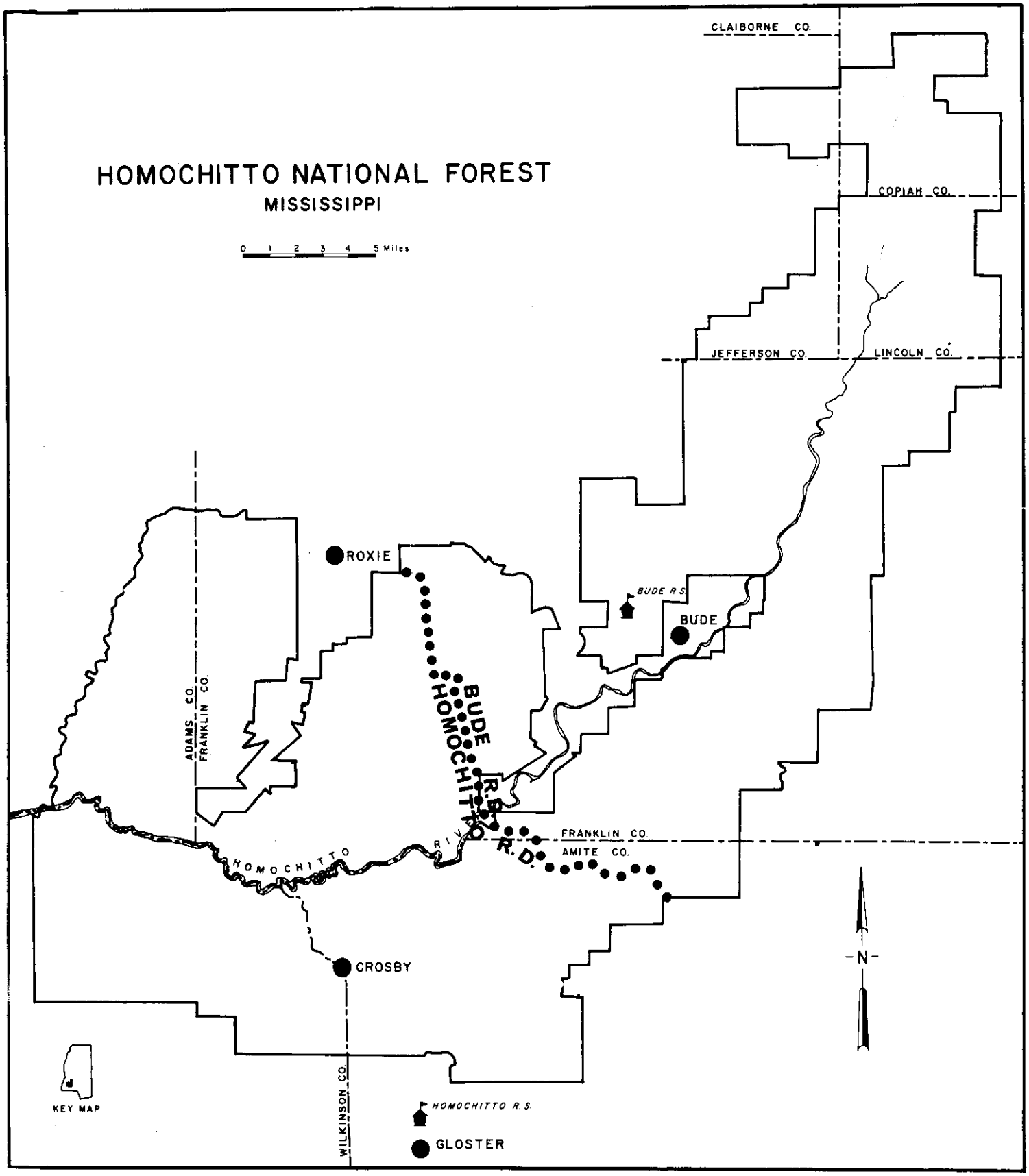

Figure 1. Map showing area surveyed in southern pine beetle evaluation, Homochitto National Forest, Mississippi, 1974.

Type of Damage - Death of the tree is the result of cambial mining by the southern pine beetle as it constructs its gallery. The beetle also introduces the blue stain fungi, *Ceratocystis* spp., which slows down or blocks conduction of water in the stem.

Life cycle of the beetle - The beetles attack in pairs and construct a winding gallery in the cambium. Eggs are deposited in niches along the sides of the galleries. The eggs hatch into whitish grubs that further mine the cambium and then construct cells in the bark for pupation. The callow adults then mine through the bark to emerge. The complete life cycle takes about a month during the summer and as many as seven generations may be produced in a year.

RESULTS AND DISCUSSION

Southern pine beetle populations are presently at a low level on the Homochitto National Forest. There were 1.02 infested trees per M acres on the Homochitto Ranger District and 0.31 infested trees per M acres on the Bude Ranger District. This reflects continued low population levels from those reported in the evaluation conducted during the spring of 1974. Figures 2a and 2b show the trend of southern pine beetle population levels on the Bude and Homochitto Ranger Districts for the last four years.

Tables 1 and 2 summarize the results of the evaluation for each of the Districts.

The following is a narrative discussion of ground observations on the Districts.

Bude District - Ten percent of the spots examined during the ground check were infested with southern pine beetle. Results from the aerial phase indicated approximately 1.24 spots per M acres of host type. No bark samples were taken on this District.

Homochitto District - Twenty-seven percent of the spots ground checked on this District were found to be infested with southern pine beetles. Expanded aerial data indicated there were 1.68 spots per M acres susceptible host type. Brood densities of 350 insects per square foot were found in bark samples taken on the District.

RECOMMENDATIONS

Southern pine beetle population levels have remained low on the Homochitto National Forest. Both Districts are conducting excellent suppression programs. In view of the continued low population levels, it is suggested that a minimal amount of Project funds

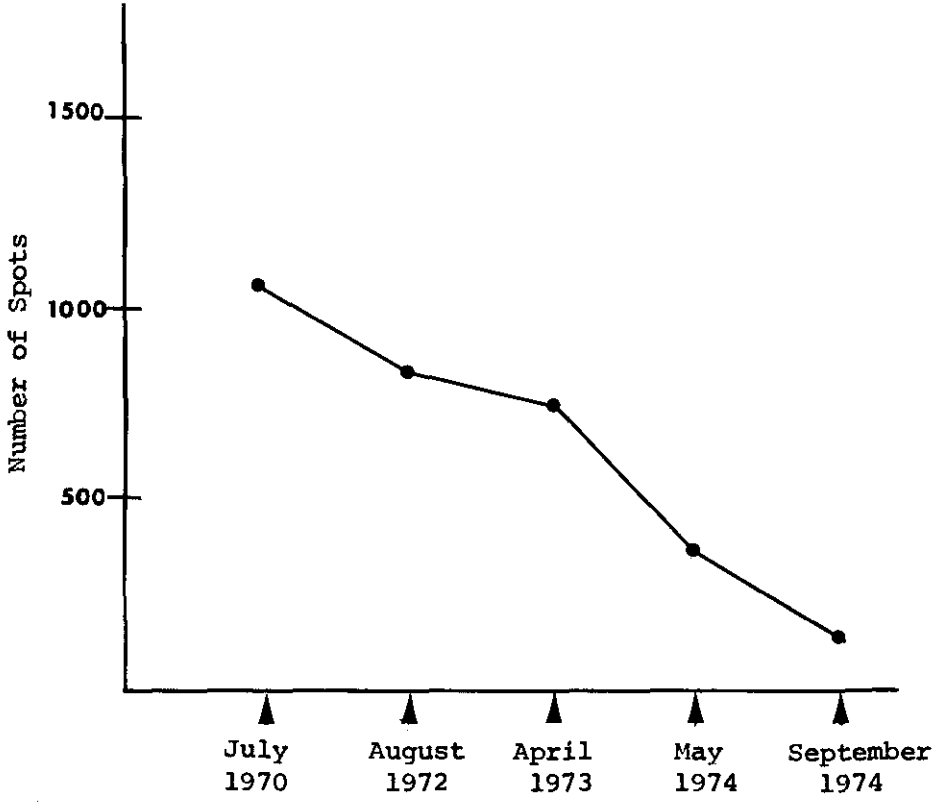

Figure 2a. Illustration of trend of southern pine beetle spots on the Bude District, Homochitto National Forest, Mississippi.

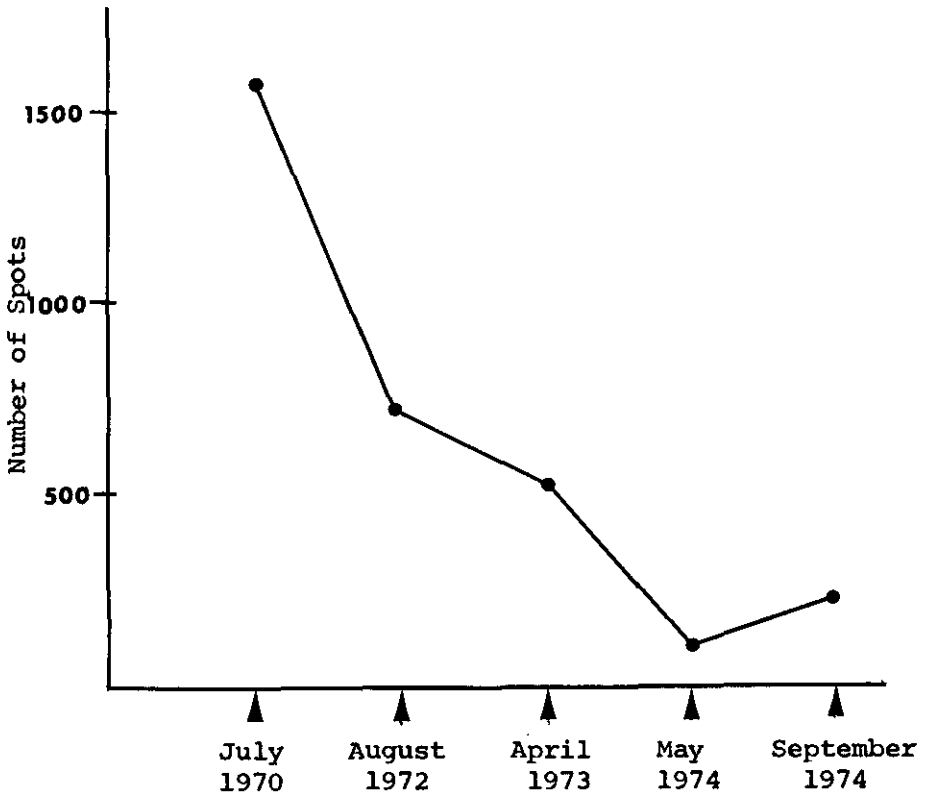

Figure 2b. Illustration of trend of southern pine beetle spots on the Homochitto District, Homochitto National Forest, Mississippi.

Table 1.--Results of southern pine beetle evaluation on the Homochitto National Forest, Mississippi, October 1974

	Bude R. D.	Homochitto R. D.
1. Results compiled from data collected during the aerial phase of the evaluation:		
Survey type	Photographic	Photographic
Date of Survey	Oct. 10, 11, 1974	Oct. 10, 11, 1974
Percent Survey	25	25
Total acreage surveyed	188,407	185,090
Total susceptible host type acreage	126,232	124,010
Total number of spots within survey boundary	156	208
Spots per M acres of host type	1.24	1.68
Average spot size (trees)	2.56	2.29
Range of spot size (trees)	1 - 30	1 - 11
Reds and faders per M acres host type	3.17	3.84
2. Results compiled from data collected during the ground and aerial phase of the evaluation:		
Date of ground phase	Oct. 29, 1974	Oct. 29, 1974
Infested trees per M acres host type	0.31	1.02
Total number of infested trees	39	127
Total number of affected[1/] trees	39	195
Brood density (brood per square foot)	--	350
Infested green to infested red tree ratio	0.0:1	0.0:1
Volume of infested pulp (CCF)	0.0	1.5
Volume of infested sawtimber (MBF)	14.5	2.7
Volume of affected pulp (CCF)	0.0	2.4
Volume of affected sawtimber (MBF)	14.5	3.8
Percent of spots infested	10 percent	27 percent

1/ Affected means attacked and/or killed.

Table 2.--Summary of aerial survey data - southern pine beetle evaluation, Homochitto National Forest, Mississippi, October 1974[1/]

Ownership	Singles	Spot Size (Trees) 2-5 Spots:Trees	6-20 Spots:Trees	21-50 Spots:Trees	51+ Spots:Trees	Total Spots:Trees	Average Multiple Tree Spot Size
Bude R. D.	92	52:140	8:48	4:120	0:0	156:400	4.81
Homochitto R. D.	108	84:244	16:124	0:0	0:0	208:476	3.68
Total Homochitto N. F.	200	136:384	24:172	4:120	0:0	364:876	4.14

1/ Expanded to 100 percent survey coverage.

be used in suppression activities. Districts are encouraged to continue regular survey and control activities. If an evaluation conducted next spring shows infestations remaining at a low level, consideration should be given to termination of the Project. In the event a marked increase in southern pine beetle activity is noted, the Alexandria Field Office should be notified.

REFERENCES

Rush, P. A. and D. H. Wilmore, 1972. Evaluation of southern pine beetle infestation on the Homochitto National Forest, Mississippi. USDA, USFS, SA, S&PF, Forest Pest Mgmt. Group, Report No. 73-2-5.

Terry, J. R., J. F. Denniston and I. R. Ragenovich, 1974. Evaluation of southern pine beetle infestations on the Homochitto National Forest, Mississippi, USDA, USFS, SA, S&PF, Forest Pest Mgmt. Group, Rept. No. 74-2-9.

Terry, J. R. and D. H. Wilmore, 1970. Evaluation of southern pine beetle infestation on the Homochitto National Forest, Mississippi. USDA, USFS, SA, S&PF, Forest Pest Mgmt. Group, Report No. 71-2-11.

Wilmore, D. H., P. A. Rush and W. A. Nettles, 1973. Evaluation of southern pine beetle infestation on the Homochitto National Forest, Mississippi. USDA, USFS, SA, S&PF, Forest Pest Mgmt. Group, Report No. 73-2-19.